

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Canceled)

2. (Currently Amended) A system according to claim 14 [[1]], wherein the equation includes a term representing the instantaneous flow, and a term representing the differential coefficient with time of the instantaneous flow, where each of these two terms can be positive or negative.

3. (Currently Amended) A system according to 14 [[1]], wherein the equation taking account of the direction of the flow is a differential equation of the form:

$$dq(t)/dt + \alpha(q(t)) = \beta \times \Delta p(t),$$

where

$q(t)$ represents the wanted instantaneous flow,

$dq(t)/dt$ represents the differential coefficient with time of the wanted instantaneous flow,

$\alpha(q(t))$ represents a function that depends on the geometry of the system, of the fluid and of the flow $q(t)$,

β represents a coefficient that depends on the geometry of the device,

$\Delta p(t)$ represents the measured instantaneous pressure difference.

4. (Currently Amended) A system according to claim 14 [[1]], wherein the system also includes a temperature measuring probe.

5. (Previously Presented) A system according to claim 4, wherein the calculation resource is designed to ascertain the density of the fluid by having the temperature measured by the temperature measuring probe and calculating the instantaneous mass flow of the fluid.

6. (Previously Presented) A system according to claim 3, wherein the system also includes a probe for measuring absolute static pressure.

7. (Previously Presented) A system according to claim 5, wherein the calculation resource is designed to calculate, in real time, the instantaneous mass flow of a fluid that is compressible in real time, by means of an absolute static pressure measurement and a temperature measurement, and by solving the equation relating the instantaneous flow to the pressure difference, where the said equation takes account of the direction of the fluid flow.

8. (Currently Amended) A system according to claim 14 [[1]], wherein the flow-velocity measuring device is a narrowing tube.

9. (Currently Amended) A system according to claim 14 [[1]], wherein the flow-velocity measuring device is a diaphragm.

10. (Currently Amended) A system according to claim 14 [[1]], wherein the flow-velocity measuring device is a venturi.

11. (Currently Amended) A system according to claim 14 [[1]], wherein the pressure difference measuring device is a differential pressure sensor connected to the two pressure take-offs.

12. (Currently Amended) A system according to claim 14 ~~[[1]]~~, wherein the means of measuring a pressure difference is a set of two relative pressure sensors connected to the two pressure take-offs.

13. (Canceled)

14. (Currently Amended) A system ~~according to claim 13~~, for the measurement, in real time, of the instantaneous flow of a fluid in steady or unsteady motion in a conduit, comprising:

- a flow-velocity measuring device placed in the conduit, where the said flow-velocity measuring device is equipped with two pressure take-offs in the wall,
- a pressure-difference measuring device designed to be connected to two pressure take-offs,
- a calculation resource designed to calculate flow, in real time, by solving an equation that relates the instantaneous flow to the pressure difference, where the latter is positive or negative in the said equation depending on variations in the speed of fluid flow in the conduit and/or the direction of the fluid flow,

wherein the calculation resource is an analogue or digital electronic calculator, and

wherein the calculation resource includes a first amplifier connected to a first input of a subtractor, an integrator connected to an output of the subtractor, a feedback loop connected between an output of the integrator and a second input of the subtractor, where the feedback loop includes a module producing the absolute value function connected to the output of the integrator, and a multiplier which is connected by a first input to an output of the module and by a second input to the output of the integrator.

15.-23. (Canceled)